

3.6 Properties of Linear Relations

- The graph of a linear relation is a _____.

A linear relation can be represented in three different ways:

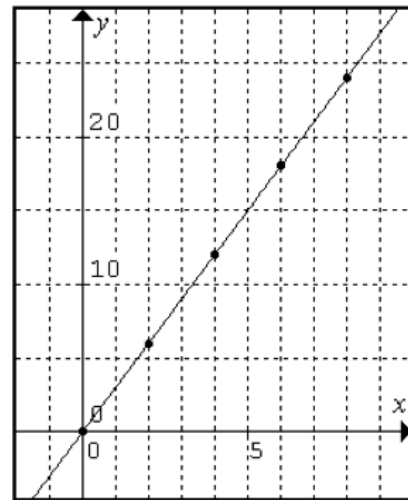
1. A table of values
2. An equation
3. A graph

Let's start with the graph and table of values:

Table of Values

| x | y |
|---|----|
| 0 | 0 |
| 2 | 6 |
| 4 | 12 |
| 6 | 18 |
| 8 | 24 |
| | |

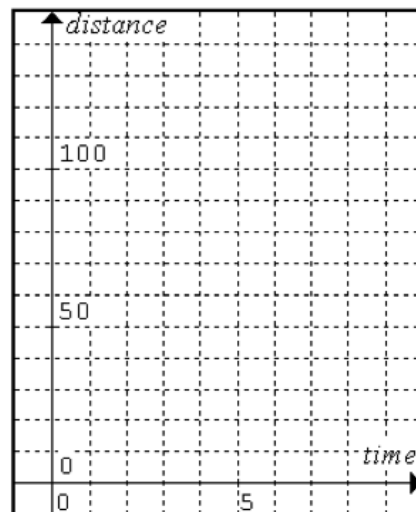
Graph



Q: What do you notice about the change in x-values and y-values?

Example 1: Does this table of values represent a linear relation?

| Time, t | Distance, d |
|---------|-------------|
| 0 | 1 |
| 2 | 5 |
| 4 | 25 |
| 6 | 125 |



Let's check by plotting the table of values.

Try These: Do the following represent linear relations?

a)

| Time | Volume |
|------|--------|
| 0 | 18 |
| 5 | 21 |
| 10 | 24 |
| 15 | 27 |
| 25 | 33 |

b)

| Time | Volume |
|------|--------|
| 0 | 19 |
| 5 | 22 |
| 10 | 26 |
| 15 | 31 |
| 25 | 337 |

Using Equations

Do these equations represent a linear relation?

a) $y = -x - 2$

Make a table of values and graph: Pick values for x and substitute to find the corresponding y-values.

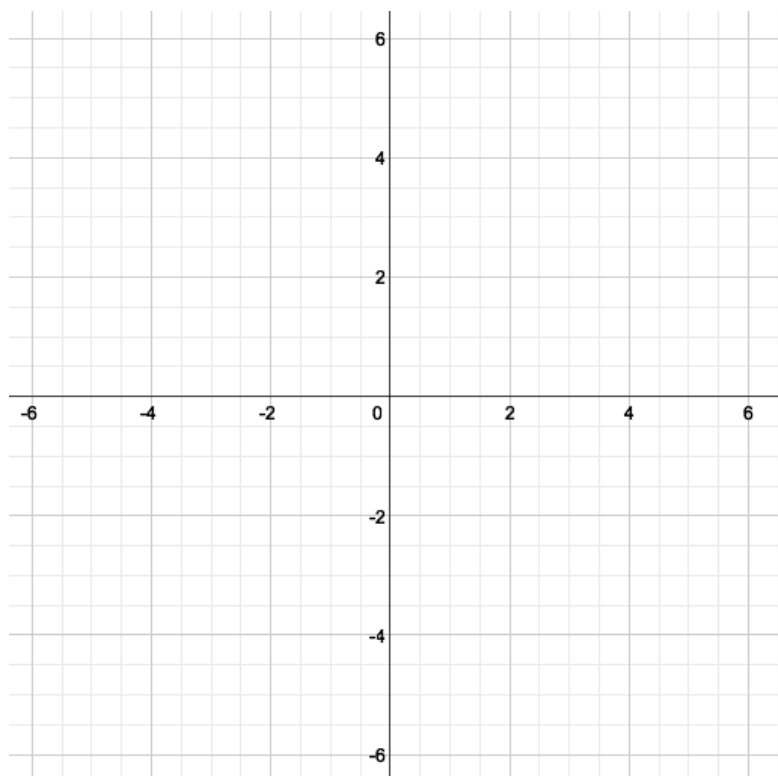
| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Linear?

b) $y = x^2 + 1$

| x | y |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Linear?



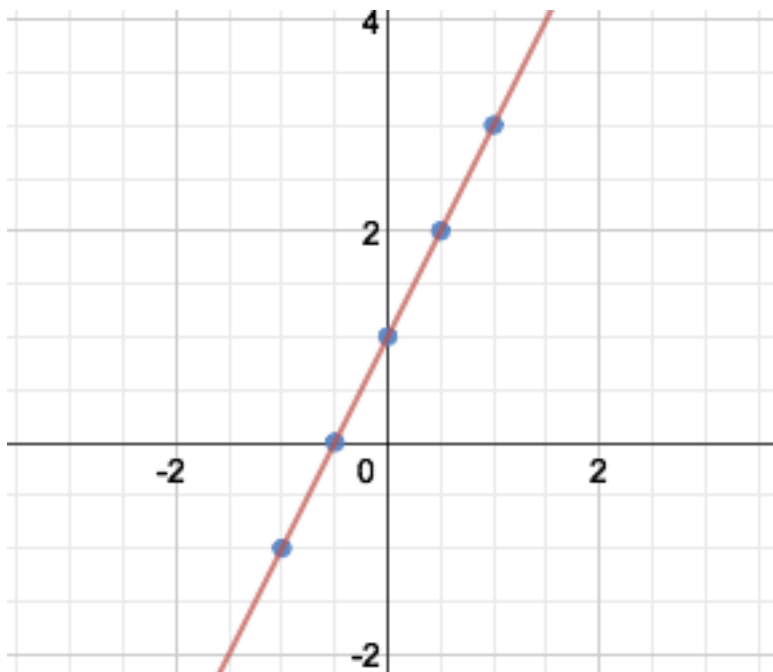
c) You Try: Is $y = 2x - 3$ linear?

Rate of Change/Slope of a Linear Relation

- Rate of change of a linear relation is also called _____.
- The rate of change of a linear relation is the _____ of a line.

Different ways to write rate of change:

Find the Rate of Change of the following Graph.



3.6 Practice

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3, 4ac, 5, 6, 7, 12, 15, Reflect